1247-0855-0V PCT

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF :

PHILIPPE BOIRE ET AL : EXAMINER: PIZIALI

SERIAL NO: 09/486,719 :

FILED: AUGUST 2, 2000 : GROUP ART UNIT: 1775

FOR: GLAZING WITH OPTICAL AND/OR ENERGETIC PROPERTIES CAPABLE OF BEING ELECTRICALLY CONTROLLED

APPEAL BRIEF

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

SIR:

This is an appeal of the Final Rejection dated December 26, 2001 of Claims 16-61. A Notice of Appeal, along with a petition for a second-month extension of time, was timely filed on May 28, 2002.

I. REAL PARTY IN INTEREST

The real party in interest in this appeal is Saint-Gobain Vitrage having an address at 18, avenue d'Alsace, F-92400 Courbevoie, France.

II. RELATED APPEALS AND INTERFERENCES

Appellants, Appellants' legal representative and the assignee are aware of no appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF THE CLAIMS

Claims 16-61, all the claims in the application, stand rejected and are herein appealed.

IV. STATUS OF THE AMENDMENTS

An Amendment under 37 CFR 1.116 was timely filed on March 19, 2002. In an Advisory Action entered April 4, 2002, confirmed by a telephone conversation with the Examiner on April 10, 2002, the Examiner indicated that upon the filing of an appeal, the amendment will be entered. The attached Appendix reflects Claims 16-61 as amended by the above-referenced Amendment under 37 CFR 1.116.

V. SUMMARY OF THE INVENTION

As recited in independent Claim 16, the invention is a glazing comprising (a) at least one electrically controllable system having variable optical and/or energy properties, (b) at least one coating for adjusting the optical appearance conferred on the said glazing by the said system, said at least one coating having antireflection properties in the visible, wherein said coating having antireflection properties is deposited on at least one of the external faces of said glazing and comprises a stack of thin layers having alternately high and low reflective indices or a graded-refractive-index layer, and (c) at least one coating for attenuating/modifying the color of the glazing in reflection.

See original Claims 1, 2 and 4, and the specification at page 6, lines 15-26, paragraph bridging pages 7 and 8, and page 9, lines 4-10.

As recited in (the only other) independent Claim 39, the invention is a glazing comprising (a) at least one electrically controllable system having variable optical and/or energy properties, and (b) at least one coating for adjusting the optical appearance conferred on the said glazing by the said system, said at least one coating having antireflection properties in the visible, wherein said coating having antireflection properties is deposited on at least one of the external faces of said glazing and comprises a stack of thin layers having alternately high and low reflective indices or a graded-refractive-index layer, and wherein the electrically controllable system (a) is a superposition of functional layers placed on a carrier substrate and provided with a protective film of the inorganic or polymeric layer type.

See original Claims 1, 2 and 14, and the specification at page 6, lines 15-26, paragraph bridging pages 7 and 8, and paragraph bridging pages 11 and 12.

VI. ISSUES

Whether the following claims are unpatentable over the following references under 35 U.S.C. §103(a):

(A) Claims 16-24, 30-32 and 35-38 over U.S. 5,777,779 (Hashimoto et al), in view of JP 08-083581 (Kiju) alone;

(B) Claims 25-26 over Hashimoto et al in view of Kiju, and additionally in view of EP 692,463 (Chartier et al);

(C) Claims 27-29 over Hashimoto et al in view of Kiju, and additionally in view of WO 97/10185 (Chopin et al);

(D) Claims 33-34, 39-49 and 55-61 over Hashimoto et al in view of Kiju, and additionally in view of U.S. 5,578,404 (Kliem);

(E) Claims 50-51 over Hashimoto et al in view of Kiju, and additionally in view of Kliem and Chartier et al; and

(F) Claims 52-54 over Hashimoto et al in view of Kiju, and additionally in view of Kliem and Chopin et al?

VII. GROUPING OF THE CLAIMS

Sole independent Claims 16 and 39 stand or fall separately. The claims dependent on the independent claims all stand or fall separately.

VIII. ARGUMENT

Claims 16-61 stand rejected under 35 U.S.C. §103(a). The rejections are untenable and should not be sustained.

The present invention relates to glazing having electrically controllable optical and/or energy properties. More particularly, as recited in independent Claim 16, the invention is a glazing comprising (a) at least one electrically controllable system having variable optical and/or energy properties, (b) at least one coating for adjusting the optical appearance conferred on the said glazing by the said system, said at least one coating having antireflection properties in the visible, wherein said coating having antireflection properties is deposited on at least one of the external faces of said glazing and comprises a stack of thin layers having alternately high and low reflective indices or a graded-refractive-index layer, and (c) at least one coating for attenuating/modifying the color of the glazing in reflection.

When both the antireflection and attenuating/modifying coatings are present, superior results are obtained, which are unobtainable without both layers, or without the antireflection coating. This superiority is demonstrated in the comparative data of record, and particularly, in Examples 3 and 4, described in the specification beginning at page 18, line 37. Better filtering properties toward heat rays, higher TL values in the bleached state (with a TL that can reach 80%, which is a real achievement for an electrochromic glazing, because the electrochromic layers, even in the bleached state, do remain a little bit absorbing). So, the anti-reflecting stack of thin layers acts in synergy with the electrochromic system, thermally **and** optically, both in the colored and uncolored state of the electrochromic system, which combination of both thermal and optical effects could not have been predicted.

In another embodiment of the present invention, as recited in independent Claim 39, the above-discussed at least one antireflection coating is present, and the electrically-controllable system is a superposition of functional layers placed on a carrier substrate and provided with a protective film of the inorganic or polymeric layer type, such as in the form of a lacquer or varnish as recited in Claim 40. This embodiment, especially when it is directed to an "all solid" electrochromic system as recited in Claim 59, is superior because this structure is really very "light", very compact, compared to the usual laminated windows or screens, and also because it is optically very advantageous.

The presently-claimed subject matter is neither disclosed nor suggested by the applied prior art. Hashimoto et al is drawn to an electrochromic device. While, as the Examiner finds, Hashimoto et al discloses the presence of an antireflection coating, Hashimoto et al do not disclose a coating for attenuating/modifying the color of the glazing in reflection. The Examiner appears to rely on the disclosure of, *inter alia*, SiO_2 for the first transparent ion conductive layer 5 and the second transparent ion conductive layer 6 (column 4, lines 1-8).

However, these layers are internal layers of the electrochromic device of Hashimoto et al. In addition, there is no evidence to support the Examiner's finding that either of layers 5 or 6 function as attenuating/modifying the color of the glazing in reflection.

Kiju discloses a face plate for a CRT, LCD or other displays comprising a high refractive index sub-stratum and a low refractive index super-stratum, as providing good antireflection and antistatic performance.

It is not clear why one skilled in the art would combine Hashimoto et al and Kiju, without the present disclosure as a guide. Hashimoto et al is drawn to electrochromic devices, while Kiju is concerned with displays such as CRT and LCD. The Examiner has provided no evidence to support a holding that one skilled in the art would employ an antireflection coating, disclosed for use with displays of the type mentioned above, as the antireflection coating for an electrochromic device. Moreover, even if one skilled in the art combined Hashimoto et al and Kiju, the result would not be presently-claimed invention since, as discussed above, the presently-recited at least one coating for attenuating/modifying the color of the glazing in reflection is neither disclosed nor suggested.

Nor, in the Final Office Action, does the Examiner address the above-discussed comparative data in support of Claim 16 and claims dependent thereon. The discussion of this comparative data is thus repeated and expanded.

Example 3 is according to the claimed invention; Example 4 contains no antireflection coating. As disclosed in the specification beginning at page 19, line 28, the optical properties of the glazing were improved when at least one coating attenuating the color or an antireflection coating was provided, but the maximum improvement was obtained by using both types of coating together. The following optical properties in the bleached

state (+1.2 V supply), and in the colored state (-1.6 V supply) were compared for Examples 3 and 4:

light transmission T_L (%);

values of a_{TL}* and b_{TL}* in the (L*, a*, b*) system in transmission;

light reflection R_{L1} on the "internal side" and the corresponding a* and b* values;

light reflection R_{L2} on the "external side" and the corresponding a* and b* values;

energy transmission T_E (%);

energy reflection R_{E1} (on the external side);

energy reflection R_{E2} (on the internal side), and

solar factor SF (the solar factor is the ratio between the total energy entering the room through the glazing to the incident solar energy).

This data is shown in the specification at (corrected) Table 1 and Table 2 at page 21, and at page 22, lines 1-8, wherein for Example 3, the SF is 33% in the coloured state (-1.6 V) and 73% in the bleached state (+1.2 V); and for Example 4, the SF is 32% in the coloured state and 67% in the bleached state.

As disclosed in the specification at page 22, lines 9-24:

> It may be seen from this data that, in the case of Example 3 according to the invention, it is possible to achieve a wider light transmission range and, in particular, to achieve a T_L of almost 80% in the bleached state. The energy transmission in the bleached state of Example 3 is also lower than that of Example 4 and the energy reflections are higher, whether in the coloured sate or in the bleached state. Example 4, which has only the anti-colour coating, already shows an improvement over standard electrochromic glazing, especially with regard to R_{L1} and R_{L2} colorimetry in reflection. But Example 3, in which an antireflection coating has been added, allows the T_L range to be broadened towards higher values and allows the glazing to be made more effective from the standpoint of the filtration of thermal, especially solar, radiation.

Kliem discloses a liquid crystal system for a computer screen, for example, and not a glazing. As shown in Figure 1 and column 14, line 14ff therein, the active layer, i.e., the

liquid crystal layer 32, is between two rigid substrates 46, 22: the protective layers 12 and 16 are not protective towards the "active" layer 32, but toward a polarizing layer 14, by sandwiching it.

In the Final Office Action, at page 9, the Examiner finds that "[t]he claims do not speak of the protective layer protecting toward the 'active' layer". In reply, it is understood that the protective film recited in Claim 39 is to protect the functional layers, not simply a layer which happens to be part of the electrically-controllable system (a). This is supported by the disclosure in the specification at page 12, lines 1-5, and indeed, the only reasonable interpretation of Claim 39 when read in light of the above-discussed disclosure is as advanced above.

In the Advisory Action entered April 4, 2002, the Examiner responds to some of the above arguments. However, as discussed in more detail below, the response is either inadequate, improper, or both.

Regarding Appellants' argument that Hashimoto et al do not disclose a coating for attenuating/modifying the color of the glazing in reflection, the Examiner relies on Appellants' disclosure at page 10, lines 24-30 of the specification that a primer/tie-layer coating may also be made to fulfill a role of attenuating the color of the glazing in reflection, combined with other disclosure that the tie-layer coating may comprise aluminum oxide, relying on page 10, lines 21-23 of the specification, or tantalum oxide, relying on page 17, lines 24-25 of the specification. Relying on this disclosure, the Examiner then asserts that Hashimoto et al disclose that their layer 4 may be aluminum oxide and that the two layers 5 and 6 may be, and are preferably, tantalum oxide. The Examiner then concludes that Hashimoto et al disclose a coating for attenuating/modifying the color of the glazing in reflection.

In reply, the Examiner improperly uses Appellants' disclosure against them, and what is more, uses it incorrectly. First of all, as already discussed above, layers 5 and 6 (as well as layer 4) are internal layers of the electrochromic device of Hashimoto et al. Nor is there any evidence to support the Examiner's finding that when aluminum oxide or tantalum oxide are used for these layers, they perform a function of attenuating/modifying the color of the glazing in reflection. Indeed, whether a coating performs an attenuating/modifying color of the glazing in reflection function is not a matter simply of the materials making up the coating, but it is also a function of the refractive indices of nearby layers. Indeed, the Examiner ignores the fact that the disclosure in the specification herein at page 10, lines 24-30 indicates that the tie-layer coating may be made to fulfill the role of attenuating the color of the glazing in reflection, "especially if it has a refractive index matching that of the plastic substrate and that of the layer of the functional system with which it is in contact."

In addition, the disclosure relied on by the Examiner to support his position is **not** prior art, but is rather part of Appellants' invention. In other words, Appellants' recognition that a tie-layer coating may perform an attenuating function if certain requirements are met is **not** any admission of prior art. Compare *In re Ruff*, 118 USPQ 340, 347 (CCPA 1958) ("To rely on an equivalence *known only to the applicant* to establish obviousness is to assume that his disclosure is a part of the prior art. The mere statement of this proposition reveals its fallaciousness.")

It is also an improper use of Appellants' disclosure to rely on the disclosure in the specification at page 17, lines 10-14 that the electrochromic glazing herein is suitable for use as a display screen of a flat-screen television. Simply because **Appellants'** invention is inclusive of both electrochromic devices and display screens for flat-screen televisions, does **not** establish that a person of ordinary skill in the art would employ an antireflection coating

used for such a display, as disclosed in Kiju, in an electrochromic device, as disclosed in Hashimoto et al. See again *Ruff, supra*.

In an Advisory Action entered April 29, 2002, the Examiner continues to improperly rely on Appellants' disclosure, and ignores the fact that whether a material, such as aluminum oxide or tantalum oxide, performs a function of attenuating/modifying color of glazing in reflection depends, at least in part, on the refractive indices of nearby layers.

Nor is it proper for the Examiner to dismiss all the comparative data of record by simply asserting that Hashimoto et al "teaches a glazing with both a coating for attenuating the color... and an antireflection coating...." The rejection herein is under 35 U.S.C. §103, not §102. Thus, inherent in the rejection is that there are differences between the presently-claimed invention and Hashimoto et al. For purposes of a complete examination, as mandated by 37 C.F.R. §1.104(b), the Examiner **must** evaluate this data, and explain his reasons for finding it deficient, if he so finds.

In the Advisory Action entered April 29, 2002, the Examiner simply repeats the above finding that Hashimoto et al's glazing contains both an antireflection layer and a layer attenuating/modifying the color, but otherwise dismisses the above argument.

Regarding Appellants' argument of how Claim 39 is to be understood, i.e., to protect the functional layers, the Examiner asserts that the claim "was not written to this specific limitation." In reply, as Appellants have argued above, the only reasonable interpretation of Claim 39 when read in light of the specification is that as advanced by Appellants. What other interpretations does the Examiner believe are reasonable?

In the Advisory Action entered April 29, 2002, the Examiner responds by finding that Claim 39 reads upon a protective film of the inorganic or polymeric layer type which is part of the electrically-controllable system. In reply, the Examiner's response sheds no light on

the issue because Appellants have never contended that the protective film was not "part" of the electrically-controllable system. Rather, Appellants contend that the protective film **necessarily** protects the functional layers of the electrically-controllable system. Kliem's protective layers do not.

Since independent Claims 16 and 39 have been demonstrated as patentable over the applied prior art, the dependent claims are necessarily patentable. Nevertheless, these claims are all separately patentable, as follows:

Claim 17 is separately patentable, because the combination of Hashimoto et al and Kiju neither discloses nor suggests the glazing of Claim 16, wherein the coating (b) also has antistatic properties, and includes a stack of thin layers at least one of which is made of an electrically conductive material of the doped-metal-oxide or conductive-polymer type.

Claim 18 is separately patentable, because the combination of Hashimoto et al and Kiju neither discloses nor suggests the glazing of Claim 16, wherein the coating (c) is in contact with the electrically controllable system (a), in the form of a thin layer having a refractive index intermediate between those of the materials with which it is in contact on each of its faces.

Claim 19 is separately patentable, because the combination of Hashimoto et al and Kiju neither discloses nor suggests the glazing of Claim 16, wherein the coating (c) includes a thin layer having a refractive index of between 1.6 and 1.9.

Claim 20 is separately patentable, because the combination of Hashimoto et al and Kiju neither discloses nor suggests the glazing of Claim 16, wherein the thin layer having a refractive index of between 1.6 and 1.9 is based on at least one of aluminum oxide Al_2O_3, yttrium oxide Y_2O_3, silicon oxycarbide SiOC, and silicon oxynitride SiON.

Claim 21 is separately patentable, because the combination of Hashimoto et al and Kiju neither discloses nor suggests the glazing of Claim 16, wherein the coating (c) includes at least two superposed thin layers whose average refractive index is between 1.6 and 1.9.

Claim 22 is separately patentable, because the combination of Hashimoto et al and Kiju neither discloses nor suggests the glazing of Claim 21, wherein the at least two superposed thin layers whose average refractive index is between 1.6 and 1.9 is an SnO_2/SiO_2 or $SnO_2/SiO_2/SnO_2$ stack.

Claim 23 is separately patentable, because the combination of Hashimoto et al and Kiju neither discloses nor suggests the glazing of Claim 16, additionally including a carrier substrate and a primer/tie-layer coating for the electrically controllable system (a) with respect to the carrier substrate.

Claim 24 is separately patentable, because the combination of Hashimoto et al and Kiju neither discloses nor suggests the glazing of Claim 23, wherein the carrier substrate comprises a polymeric/plastic material.

Claim 25 is separately patentable, because the combination of Hashimoto et al, Kiju and Chartier et al neither discloses nor suggests the glazing of Claim 16, which also includes a coating having hydrophilic/antimisting properties or having hydrophobic/anti-rain properties on at least one of its external faces.

Claim 26 is separately patentable, because the combination of Hashimoto et al, Kiju and Chartier et al neither discloses nor suggests the glazing of Claim 25, wherein the coating having hydrophobic properties includes at least one layer comprising a composition having at least one fluoroalkoxysilane, the alkoxy functional groups of which are directly linked to the silicon atom, a system of one or more aqueous solvents and at least one catalyst which is an acid and/or a Brönsted base.

Claim 27 is separately patentable, because the combination of Hashimoto et al, Kiju and Chopin et al neither discloses nor suggests the glazing of Claim 16, which also includes a coating having photocatalytic/antifouling properties.

Claim 28 is separately patentable, because the combination of Hashimoto et al, Kiju and Chopin et al neither discloses nor suggests the glazing of Claim 27, wherein the coating having photocatalytic/antifouling properties is located on at least one of its external faces.

Claim 29 is separately patentable, because the combination of Hashimoto et al, Kiju and Chopin et al neither discloses nor suggests the glazing of Claim 28, wherein the coating having photocatalytic/antifouling properties comprises TiO_2 at least partially crystallized in the anatase form.

Claim 30 is separately patentable, because the combination of Hashimoto et al and Kiju neither discloses nor suggests the glazing of Claim 16, which also includes at least one coating having electromagnetic screening properties.

Claim 31 is separately patentable, because the combination of Hashimoto et al and Kiju neither discloses nor suggests the glazing of Claim 16, wherein the electrically controllable system (a) is a superposition of functional layers placed between two carrier substrates, each of the said substrates independently being rigid, semi-rigid or flexible.

Claim 32 is separately patentable, because the combination of Hashimoto et al and Kiju neither discloses nor suggests the glazing of Claim 31, wherein the electrically controllable system (a) includes, as carrier substrate, at least one rigid substrate of which the glazing is composed, and/or at least one flexible carrier substrate associated by lamination, with a rigid substrate of which the said glazing is composed.

Claim 33 is separately patentable, because the combination of Hashimoto et al, Kiju and Kliem neither discloses nor suggests the glazing of Claim 16, wherein the electrically

controllable system (a) is a superposition of functional layers placed on a carrier substrate and provided with a protective film of the inorganic or polymeric layer type.

Claim 34 is separately patentable, because the combination of Hashimoto et al, Kiju and Kliem neither discloses nor suggests the glazing of Claim 33, wherein the protective film is in the form of a lacquer or of a varnish.

Claim 35 is separately patentable, because the combination of Hashimoto et al and Kiju neither discloses nor suggests the glazing of Claim 16, wherein the coating (c) is interposed between the electrically controllable system (a) and a substrate for said glazing.

Claim 36 is separately patentable, because the combination of Hashimoto et al and Kiju neither discloses nor suggests the glazing of Claim 16, wherein the electrically controllable system (a) is an all-solid electrochromic system.

Claim 37 is separately patentable, because the combination of Hashimoto et al and Kiju neither discloses nor suggests the glazing of Claim 16, wherein electrically controllable system (a) is in the form of a system comprising one or more reversible-insertion materials of the electrochromic system or gasochromic system type, or in the form of an optical-valve or viologen-based system.

Claim 38 is separately patentable, because the combination of Hashimoto et al and Kiju neither discloses nor suggests the glazing of Claim 16, wherein electrically controllable system (a) is in the form of a liquid-crystal or cholesteric-gel system.

Claim 40 is separately patentable, because the combination of Hashimoto et al, Kiju and Kliem neither discloses nor suggests the glazing of Claim 39, wherein the protective film is in the form of a lacquer or of a varnish.

Claim 41 is separately patentable, because the combination of Hashimoto et al, Kiju and Kliem neither discloses nor suggests the glazing of Claim 39, wherein the coating (b)

having antireflection properties also has antistatic properties, and includes a stack of thin layers at least one of which is made of an electrically conductive material of the doped-metal-oxide or conductive-polymer type.

Claim 42 is separately patentable, because the combination of Hashimoto et al, Kiju and Kliem neither discloses nor suggests the glazing of Claim 39, which also includes (c) at least one coating for attenuating/modifying the color of the glazing in reflection.

Claim 43 is separately patentable, because the combination of Hashimoto et al, Kiju and Kliem neither discloses nor suggests the glazing of Claim 42, wherein the coating (c) is in contact with the electrically controllable system (a), in the form of a thin layer having a refractive index intermediate between those of the materials with which it is in contact on each of its faces.

Claim 44 is separately patentable, because the combination of Hashimoto et al, Kiju and Kliem neither discloses nor suggests the glazing of Claim 42, wherein the coating (c) includes a thin layer having a refractive index of between 1.6 and 1.9.

Claim 45 is separately patentable, because the combination of Hashimoto et al, Kiju and Kliem neither discloses nor suggests the glazing of Claim 44, wherein the thin layer having a refractive index of between 1.6 and 1.9 is based on at least one of aluminum oxide Al_2O_3, yttrium oxide Y_2O_3, silicon oxycarbide SiOC, and silicon oxynitride SiON.

Claim 46 is separately patentable, because the combination of Hashimoto et al, Kiju and Kliem neither discloses nor suggests the glazing of Claim 42, wherein the coating (c) includes at least two superposed thin layers whose average refractive index is between 1.6 and 1.9.

Claim 47 is separately patentable, because the combination of Hashimoto et al, Kiju and Kliem neither discloses nor suggests the glazing of Claim 46, wherein the at least two

superposed thin layers whose average refractive index is between 1.6 and 1.9 is an SnO_2/SiO_2 or $SnO_2/SiO_2/SnO_2$ stack.

Claim 48 is separately patentable, because the combination of Hashimoto et al, Kiju and Kliem neither discloses nor suggests the glazing of Claim 39, additionally including a carrier substrate and a primer/tie-layer coating for the electrically controllable system (a) with respect to the carrier substrate.

Claim 49 is separately patentable, because the combination of Hashimoto et al, Kiju and Kliem neither discloses nor suggests the glazing of Claim 48, wherein the carrier substrate comprises a polymeric/plastic material.

Claim 50 is separately patentable, because the combination of Hashimoto et al, Kiju, Kliem, and Chartier et al neither discloses nor suggests the glazing of Claim 39, which also includes a coating having hydrophilic/antimisting properties or having hydrophobic/anti-rain properties on at least one of its external faces.

Claim 51 is separately patentable, because the combination of Hashimoto et al, Kiju, Kliem, and Chartier et al neither discloses nor suggests the glazing of Claim 50, wherein the coating having hydrophobic properties includes at least one layer comprising a composition having at least one fluoroalkoxysilane, the alkoxy functional groups of which are directly linked to the silicon atom, a system of one or more aqueous solvents and at least one catalyst which is an acid and/or a Brönsted base.

Claim 52 is separately patentable, because the combination of Hashimoto et al, Kiju, Kliem, and Chopin et al neither discloses nor suggests the glazing of Claim 39, which also includes a coating having photocatalytic/antifouling properties.

Claim 53 is separately patentable, because the combination of Hashimoto et al, Kiju, Kliem, and Chopin et al neither discloses nor suggests the glazing of Claim 52, wherein the

coating having photocatalytic/antifouling properties is located on at least one of its external faces.

Claim 54 is separately patentable, because the combination of Hashimoto et al, Kiju, Kliem, and Chopin et al neither discloses nor suggests the glazing of Claim 53, wherein the coating having photocatalytic/antifouling properties comprises TiO_2 at least partially crystallized in the anatase form.

Claim 55 is separately patentable, because the combination of Hashimoto et al, Kiju and Kliem neither discloses nor suggests the glazing of Claim 39, which also includes at least one coating having electromagnetic screening properties.

Claim 56 is separately patentable, because the combination of Hashimoto et al, Kiju and Kliem neither discloses nor suggests the glazing of Claim 39, wherein the electrically controllable system (a) is a superposition of functional layers placed between two carrier substrates, each of the said substrates independently being rigid, semi-rigid or flexible.

Claim 57 is separately patentable, because the combination of Hashimoto et al, Kiju and Kliem neither discloses nor suggests the glazing of Claim 56, wherein the electrically controllable system (a) includes, as carrier substrate, at least one rigid substrate of which the glazing is composed, and/or at least one flexible carrier substrate associated by lamination, with a rigid substrate of which the said glazing is composed.

Claim 58 is separately patentable, because the combination of Hashimoto et al, Kiju and Kliem neither discloses nor suggests the glazing of Claim 42, wherein the coating (c) is interposed between the electrically controllable system (a) and a substrate for said glazing.

Claim 59 is separately patentable, because the combination of Hashimoto et al, Kiju and Kliem neither discloses nor suggests the glazing of Claim 39, wherein the electrically controllable system (a) is an all-solid electrochromic system.

Claim 60 is separately patentable, because the combination of Hashimoto et al, Kiju and Kliem neither discloses nor suggests the glazing of Claim 39, wherein electrically controllable system (a) is in the form of a system comprising one or more reversible-insertion materials of the electrochromic system or gasochromic system type, or in the form of an optical-valve or viologen-based system.

Claim 61 is separately patentable, because the combination of Hashimoto et al, Kiju and Kliem neither discloses nor suggests the glazing of Claim 39, wherein electrically controllable system (a) is in the form of a liquid-crystal or cholesteric-gel system.

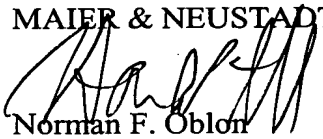
For all the above reasons, it is respectfully requested that all the rejections be REVERSED.

IX. CONCLUSION

For the above reasons, it is respectfully requested that all the rejections still pending in the Final Office Action be REVERSED.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



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APPENDIX

CLAIMS ON APPEAL

16. Glazing comprising (a) at least one electrically controllable system having variable optical and/or energy properties, (b) at least one coating for adjusting the optical appearance conferred on the said glazing by the said system, said at least one coating having antireflection properties in the visible, wherein said coating having antireflection properties is deposited on at least one of the external faces of said glazing and comprises a stack of thin layers having alternately high and low reflective indices or a graded-refractive-index layer, and (c) at least one coating for attenuating/modifying the color of the glazing in reflection.

17. Glazing according to Claim 16, wherein the coating (b) also has antistatic properties, and includes a stack of thin layers at least one of which is made of an electrically conductive material of the doped-metal-oxide or conductive-polymer type.

18. Glazing according to Claim 16, wherein the coating (c) is in contact with the electrically controllable system (a), in the form of a thin layer having a refractive index intermediate between those of the materials with which it is in contact on each of its faces.

19. Glazing according to Claim 16, wherein the coating (c) includes a thin layer having a refractive index of between 1.6 and 1.9.

20. Glazing according to Claim 19, wherein the thin layer having a refractive index of between 1.6 and 1.9 is based on at least one of aluminum oxide Al_2O_3, yttrium oxide Y_2O_3, silicon oxycarbide SiOC, and silicon oxynitride SiON.

21. Glazing according to Claim 16, wherein the coating (c) includes at least two superposed thin layers whose average refractive index is between 1.6 and 1.9.

22. Glazing according to Claim 21, wherein the at least two superposed thin layers whose average refractive index is between 1.6 and 1.9 is an SnO_2/SiO_2 or $SnO_2/SiO_2/SnO_2$ stack.

23. Glazing according to Claim 16, additionally including a carrier substrate and a primer/tie-layer coating for the electrically controllable system (a) with respect to the carrier substrate.

24. Glazing according to Claim 23, wherein the carrier substrate comprises a polymeric/plastic material.

25. Glazing according to Claim 16, which also includes a coating having hydrophilic/antimisting properties or having hydrophobic/anti-rain properties on at least one of its external faces.

26. Glazing according to Claim 25, wherein the coating having hydrophobic properties includes at least one layer comprising a composition having at least one fluoroalkoxysilane, the alkoxy functional groups of which are directly linked to the silicon atom, a system of one or more aqueous solvents and at least one catalyst which is an acid and/or a Brönsted base.

27. Glazing according to Claim 16, which also includes a coating having photocatalytic/antifouling properties.

28. Glazing according to Claim 27, wherein the coating having photocatalytic/antifouling properties is located on at least one of its external faces.

29. Glazing according to Claim 28, wherein the coating having photocatalytic/antifouling properties comprises TiO_2 at least partially crystallized in the anatase form.

30. Glazing according to Claim 16, which also includes at least one coating having electromagnetic screening properties.

31. Glazing according to Claim 16, wherein the electrically controllable system (a) is a superposition of functional layers placed between two carrier substrates, each of the said substrates independently being rigid, semi-rigid or flexible.

32. Glazing according to Claim 31, wherein the electrically controllable system (a) includes, as carrier substrate, at least one rigid substrate of which the glazing is composed, and/or at least one flexible carrier substrate associated by lamination, with a rigid substrate of which the said glazing is composed.

33. Glazing according to Claim 16, wherein the electrically controllable system (a) is a superposition of functional layers placed on a carrier substrate and provided with a protective film of the inorganic or polymeric layer type.

34. Glazing according to Claim 33, wherein the protective film is in the form of a lacquer or of a varnish.

35. Glazing according to Claim 16, wherein the coating (c) is interposed between the electrically controllable system (a) and a substrate for said glazing.

36. Glazing according to Claim 16, wherein the electrically controllable system (a) is an all-solid electrochromic system.

37. Glazing according to Claim 16, wherein electrically controllable system (a) is in the form of a system comprising one or more reversible-insertion materials of the electrochromic system or gasochromic system type, or in the form of an optical-valve or viologen-based system.

38. Glazing according to Claim 16, wherein electrically controllable system (a) is in the form of a liquid-crystal or cholesteric-gel system.

39. Glazing comprising (a) at least one electrically controllable system having variable optical and/or energy properties, and (b) at least one coating for adjusting the optical appearance conferred on the said glazing by the said system, said at least one coating having antireflection properties in the visible, wherein said coating having antireflection properties is deposited on at least one of the external faces of said glazing and comprises a stack of thin layers having alternately high and low reflective indices or a graded-refractive-index layer, and wherein the electrically controllable system (a) is a superposition of functional layers placed on a carrier substrate and provided with a protective film of the inorganic or polymeric layer type.

40. Glazing according to Claim 39, wherein the protective film is in the form of a lacquer or of a varnish.

41. Glazing according to Claim 39, wherein the coating (b) having antireflection properties also has antistatic properties, and includes a stack of thin layers at least one of which is made of an electrically conductive material of the doped-metal-oxide or conductive-polymer type.

42. Glazing according to Claim 39, which also includes (c) at least one coating for attenuating/modifying the color of the glazing in reflection.

43. Glazing according to Claim 42, wherein the coating (c) is in contact with the electrically controllable system (a), in the form of a thin layer having a refractive index intermediate between those of the materials with which it is in contact on each of its faces.

44. Glazing according to Claim 42, wherein the coating (c) includes a thin layer having a refractive index of between 1.6 and 1.9.

45. Glazing according to Claim 44, wherein the thin layer having a refractive index of between 1.6 and 1.9 is based on at least one of aluminum oxide Al_2O_3, yttrium oxide Y_2O_3, silicon oxycarbide SiOC, and silicon oxynitride SiON.

46. Glazing according to Claim 42, wherein the coating (c) includes at least two superposed thin layers whose average refractive index is between 1.6 and 1.9.

47. Glazing according to Claim 46, wherein the at least two superposed thin layers whose average refractive index is between 1.6 and 1.9 is an SnO_2/SiO_2 or $SnO_2/SiO_2/SnO_2$ stack.

48. Glazing according to Claim 39, additionally including a carrier substrate and a primer/tie-layer coating for the electrically controllable system (a) with respect to the carrier substrate.

49. Glazing according to Claim 48, wherein the carrier substrate comprises a polymeric/plastic material.

50. Glazing according to Claim 39, which also includes a coating having hydrophilic/antimisting properties or having hydrophobic/anti-rain properties on at least one of its external faces.

51. Glazing according to Claim 50, wherein the coating having hydrophobic properties includes at least one layer comprising a composition having at least one fluoroalkoxysilane, the alkoxy functional groups of which are directly linked to the silicon atom, a system of one or more aqueous solvents and at least one catalyst which is an acid and/or a Brönsted base.

52. Glazing according to Claim 39, which also includes a coating having photocatalytic/antifouling properties.

53. Glazing according to Claim 52, wherein the coating having photocatalytic/antifouling properties is located on at least one of its external faces.

54. Glazing according to Claim 53, wherein the coating having photocatalytic/antifouling properties comprises TiO_2 at least partially crystallized in the anatase form.

55. Glazing according to Claim 39, which also includes at least one coating having electromagnetic screening properties.

56. Glazing according to Claim 39, wherein the electrically controllable system (a) is a superposition of functional layers placed between two carrier substrates, each of the said substrates independently being rigid, semi-rigid or flexible.

57. Glazing according to Claim 56, wherein the electrically controllable system (a) includes, as carrier substrate, at least one rigid substrate of which the glazing is composed, and/or at least one flexible carrier substrate associated by lamination, with a rigid substrate of which the said glazing is composed.

58. Glazing according to Claim 42, wherein the coating (c) is interposed between the electrically controllable system (a) and a substrate for said glazing.

59. Glazing according to Claim 39, wherein the electrically controllable system (a) is an all-solid electrochromic system.

60. Glazing according to Claim 39, wherein electrically controllable system (a) is in the form of a system comprising one or more reversible-insertion materials of the electrochromic system or gasochromic system type, or in the form of an optical-valve or viologen-based system.

61. Glazing according to Claim 39, wherein electrically controllable system (a) is in the form of a liquid-crystal or cholesteric-gel system.